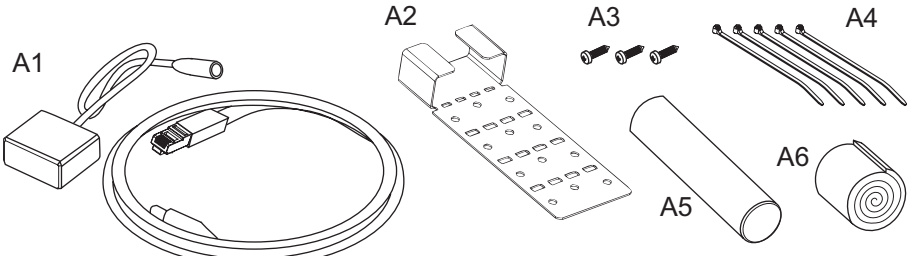
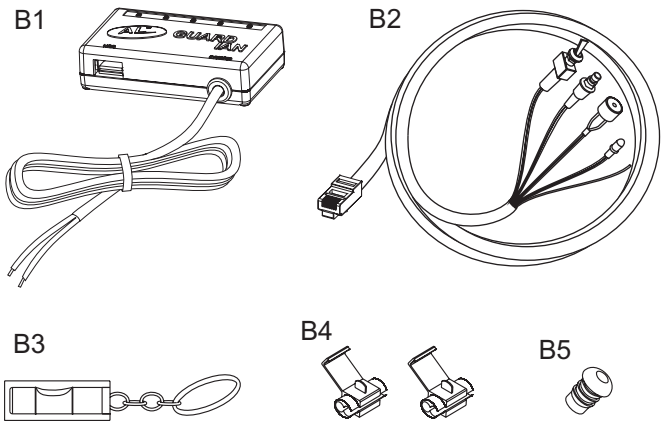
Package Contents

A. Sensor Unit



B. Control Unit



A1 Outer Sensor
A2 Bracket
A3 Screws
A4 Cable ties
A5 Shrinking tube
A6 Adhesive tape

B1 Control Box
B2 Control Set
B3 Level
B4 Wire taps
B5 LED holder

B6 User Guide

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Important Safety Instructions

READ BEFORE OPERATING

This product was designed and manufactured to meet strict quality and safety standards. There are, however, some installation and operation precautions which you should be particularly aware of. Therefore read, keep and follow these guidelines during installation and use:

Take special care while installing the sensor head. Damaging the cable or the factory installed connector on the cable may cause malfunction and will void warranty.

While the sensor is water resistant and intended to be installed on the outside of the vehicle, the control box and it's connections must be made and kept in a dry area, preferably the passenger cabin. Warranty will be deemed invalid if failures are caused by improper installation.

Do not plug more than four outer sensors into the control box. Do not plug any third party equipment into any of the sockets in the control box. Do not plug any part of the AL G9 into third party equipment. Doing so may cause fire or damage to the unit and voids warranty.

Since AL G9 operates on a different voltage it is NOT to be mixed with AL G8 components. Doing so would cause characteristic failure of the unit and voids warranty.

It will take time to get acquainted with the range of the parking sensor, which can vary from 0 to 3 meters, from your car to the obstruction. Therefore rely on your personal judgment.

AL G9 can NOT detect glass or other transparent objects.

During warm-up mode (first 60 seconds of operation) AL G9 functions are limited.

While driving, especially in winter months, dirt and filth can accumulate on the outer sensor lens, which can affect the sensor's performance. Wipe the lens periodically with a dry or moist cloth. Do not use cleaning solvents other than water.

Laser signals emitted from AL G9 can cause interference to other laser equipment. If such a case is detected by the unit the system will reset within few seconds.

If the vehicle where AL system is to be installed is already using another laser system (for instance laser cruise control, or similar) two systems could interfere with each other. Such vehicles may not be suitable for use of AL system.

Use of laser products may be regulated by your local laws. Check your local laws before using this product.

Special caution
AL G9 laser sensor emits an invisible laser beam that can be harmful to sight. Never, under any circumstances look at the sensor while it is operating.

Safety and Conformity

Electromagnetic compatibility

The AL G9 Guardian is fully in conformity with the requirements of Council Directive 2004/108/EC Electromagnetic Compatibility (EMC), based on the full compliance of the product with the following European/International Standards:
Emissions: EN 61000-6-3 (IEC 61000-6-3)
Immunity: EN 61000-6-1 (IEC 61000-6-1)
The labelling of the AL G9 which is affixed on the top of the Outer Sensor and the Control Box housing meets the requirements of the guideline 2004/108/EC:

CE

The AL G9 Guardian is fully in conformity with the requirements of Automotive EMC Directive 2004/104/EC amended by directives 2005/49/EC, 2005/83/EC, 2006/28/EC and approved by State Office for Metrology of Republic of Croatia with approval number 10R-02 0004.

E25

Laser safety

The AL G9 is tested and classified as Class 1M laser product in accordance to European and International Eye safety regulations EN 60825-1 and IEC 60825-1.
Definition: Class 1M-laser products are safe under reasonably foreseeable conditions of operation, but may be hazardous if the user employs optics within the beam.
An Outer Sensor unit of the AL G9 system is labelled in accordance to regulations:

DO NOT VIEW DIRECTLY WITH
OPTICAL INSTRUMENTS (MAGNIFIERS)
CLASS 1M LASER PRODUCT

For products delivered into the United States the following clause applies:
Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated July 26, 2001.

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1. Introduction

Thank you for purchasing AL G9 GUARDIAN, a multipurpose parking sensor designed for your driving comfort by A-ELEKTRONIK, Croatia.

The G9 comprises parts fabricated to military standards and was designed to keep you and your vehicle safe by enabling effortless parking and greater confidence while driving. As opposed to classic infra-red sensors that use light emitting diodes AL G9 is equipped with a laser diode that is used in military range-finders and police speed detectors, the power of which is one hundred times greater than that of a LED diode. In addition, it incorporates the new laser detection technology that is a significant improvement in the industry and will ensure higher precision, more reliability with high resistance to temperature changes and foreign light interferences, specifically Sun rays.

The G9 works on the 905 nm light frequency. It constantly emits laser signals and recognizes them if they return reflected from an obstacle, consequently warning the user. Thanks to the advanced program code the G9 will differentiate the laser signals coming from other laser sources.

If an AL Driveway Unit (an option) is installed in your driveway or garage the G9 becomes a driveway light activator and/or a garage door opener.

As we continue to work on developing new products and supply constant improvements to our existing products we thank you for the support given by this purchase.

AL G9 is patent pending according to PCT/HR2008/000015.

Revision X Improvements

AL G9 superior laser detection is achieved by completely new electronic and computing design of the reception system. The unit's memory has been doubled enabling new program features to be added.

The latest hardware revision brings more advancements:

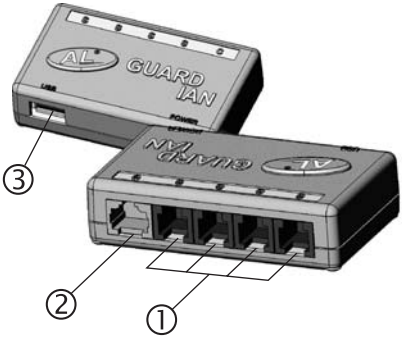
- waterproof connector 1 meter from the sensor for easier installation
- thick shielded cable prevents engine interference and mechanical damage
- cable stress relief is now inside the sensor making it smaller
- optional extension cables available to fit to any length
- improved laser sensitivity (+15%)
- improved power filtering against power line noise
- fully effective from 10V to 17V power supply
- improved parking assistance performance
- even wider angle protection (up to ±12°H ±12°V)
- Control Box now comes with plug in Memocard enabling quick upgrades by end users

IMPORTANT NOTE: The G9 uses lower voltage and less current consumption and is NOT compatible with AL G8 components.

2. Main parts of the Product

Control Box

The central part and the brain unit of the AL G9. It includes a processor, a removable Memocard with upgradeable flash memory, a complex power supply unit and the following sockets:



1) 4 S sockets for front/rear sensors connection
2) C socket for control set connection
3) USB socket for AL G9 additional feature modules

Outer Sensor

Incorporates emitting and detection circuits: includes one emitting and four reception diodes.

As this unit is installed on the outside of the vehicle, it is specially protected from water and mechanical damage. Sensor cable is 1 meter long ending with a waterproof connector. The product set can consist of one to four outer sensors.

Control Set

A cable with a C connector on one end which should be connected to the C socket of the Control Box. The other end of the cable consists of controls that include:

on&off switch,
speaker,
two-color light diode,
programming key button,
mute wire for car stereo.

3. Installation

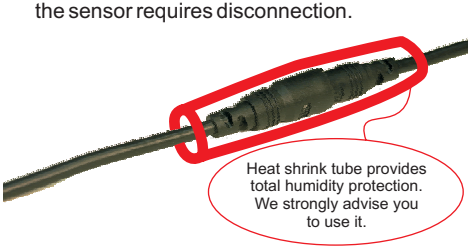
To obtain the best performance of your AL G9 and insure long service life, seek a professional installer to mount the product. To begin installation follow these steps and refer to the Installation diagram.

OUTER SENSOR

Can be mounted between the front grill partitions or above the rear bumper. Take care not to damage the cable or the factory installed connector on the cable during installation (cutting the cable or removing the factory installed connector voids warranty and may cause malfunction).

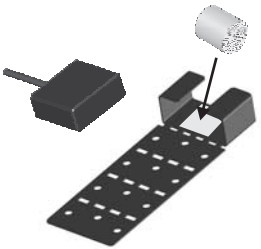
① Check if the cable is long enough to reach the desired position. The RX sensor cable (1 meter) is to be connected with a connecting cable (4 meters). A total of 5 meters in lenght can be reached. Longer range can be achieved by adding an Extension cable (2,5 meters, purchased separately).

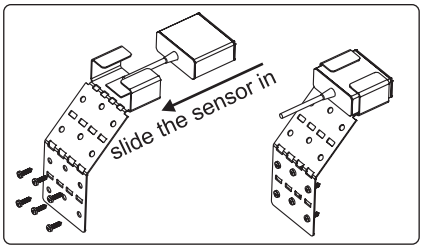
To achieve maximum water resistance put a heat shrink tube (included) on the connector. Use a strong heater for the tube to shrink and conform to connector size. The tube can be torn apart when the sensor requires disconnection.



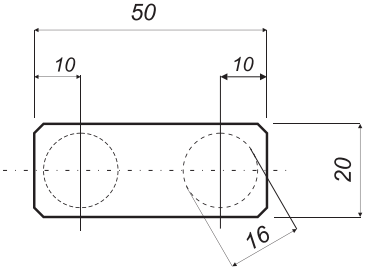
OPTION: 2,5 m Extension cable

② Attach the unit using double-sided adhesive tape and a mounting bracket to a position that offers a clear front (back) view. The mounting bracket can be bent as needed. Make sure the sensor is installed firmly in order to absorb vibrations that occur while driving, especially if mounted on a motorbike. For maximum grip use an adhesive tape in combination with the mounting bracket.

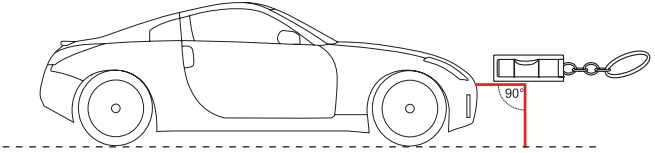




If installing sensors behind flat surfaces (plastic bumpers, dens grills) it will be necessary to drill holes through which the sensor will have unobstructed view of the road. Two circles on the sketch of the sensor lens represent area where receiving and emitting diodes are positioned. These circles must be clear of obstruction while the rest of the lens can be covered if needed. Obstructing surface should not be more than 1 cm away from the sensor lens, or larger holes should be drilled to maintain angle protection.



③ Make sure the sensor is levelled (use a level to check).



CONTROL BOX

The Control Box is to be mounted in the interior of the vehicle at the place of your choice and it should not be exposed to water.

4 Locate access to the power supply of the vehicle (+12 V)

5 Connect the **RED** Control Box wire to the positive battery lead and **BLACK** Control Box wire to the ground lead or the car chassis. If using the supplied wire taps (to be used only on a wire of the appropriate size) insure that they are properly locked and preferably wrap them with insulation tape afterwards.

To avoid the possibility of draining your car battery by accidentally leaving your AL G9 system on for prolonged time, use the following connection method instead of the one described above:

Connect the BLACK Control Box wire to the car chassis or to the negative ground power supply wire of your vehicle's system and connect the RED Control Box wire to the SWITCHED positive power supply wire usually found in the car radio power supply.

6 After the control box is connected to the battery, connect the sensor into one of the S sockets. If having more than 1 sensor connect all of them, their order is not relevant.

(1A fuse is factory installed inside the Control Box but if required additional fuses can be installed externally in the wiring.)

CONTROL SET

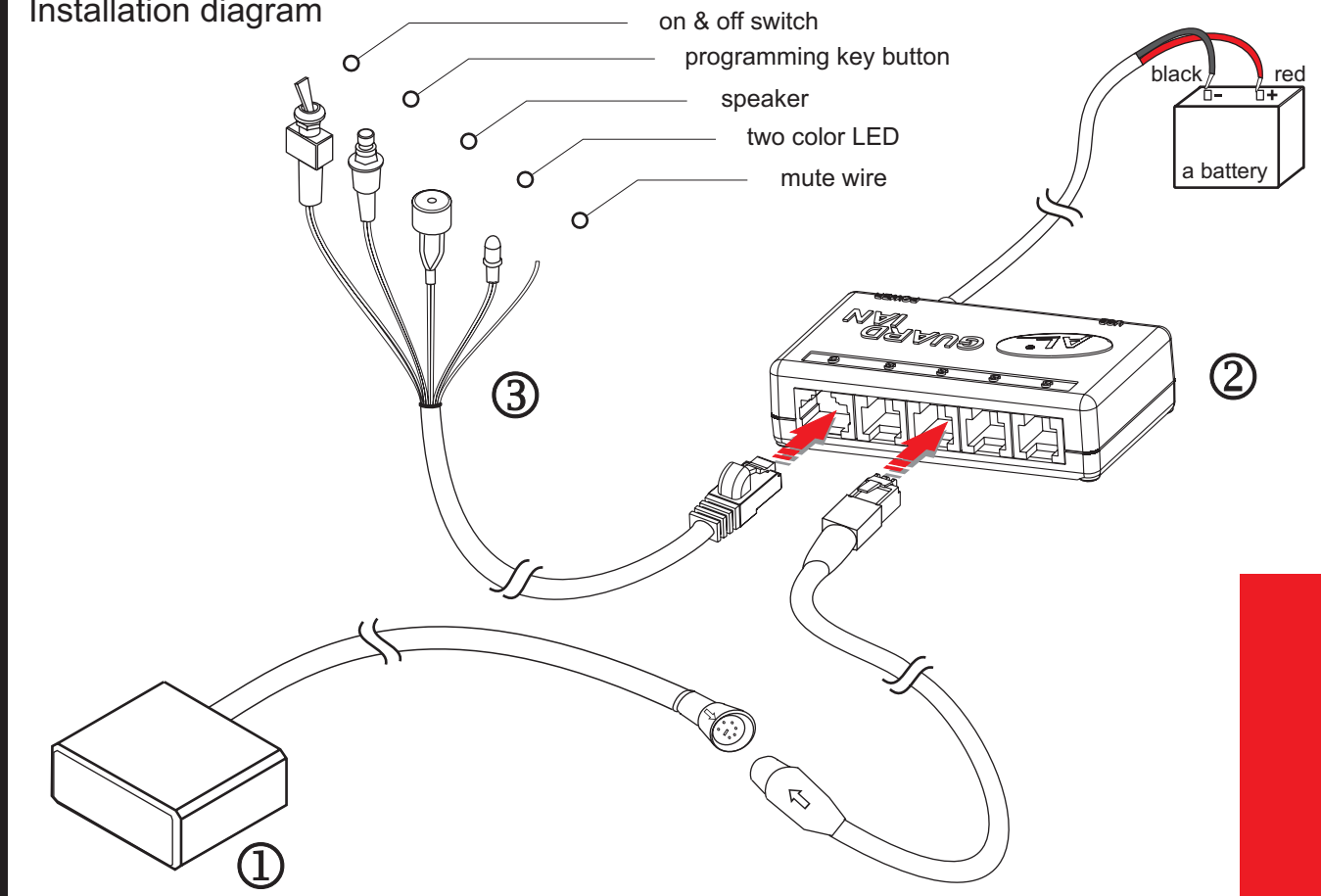
7 Define where to install each control in the vehicle interior while keeping in mind that the on&off switch and programming key button should be close at hand and that the two-color light diode is in sight while the speaker should remain within hearing range of the driver. Use a LED holder supplied with the installation accessories when installing a two color LED diode.

OPTIONAL: If using a Control Set in a Box instead of installing each control separately mount the box in a clearly seen position.

8 Connect the C connector to the C socket of the Control Box.

9 Connect the blue car radio mute wire to the corresponding audio mute input on the car radio, if it has one.

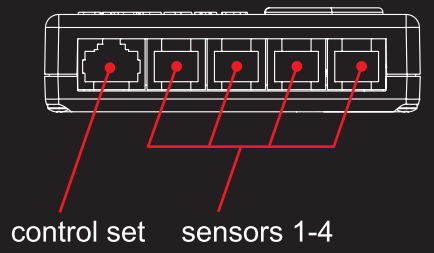
Installation diagram

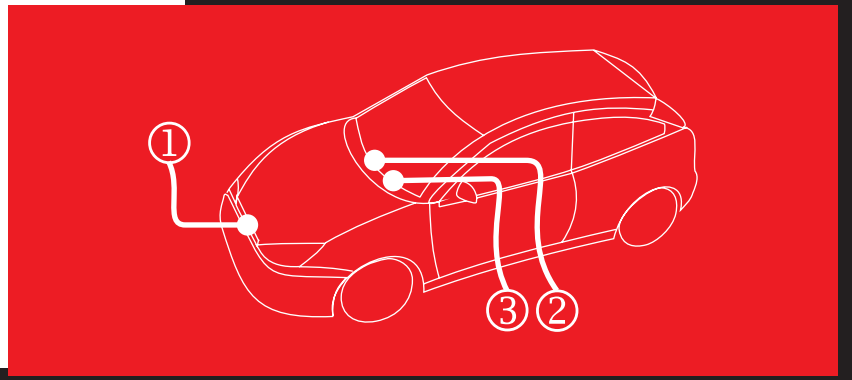


① OUTER SENSOR

② CONTROL BOX

③ CONTROL SET





4. Usage

Turn on your AL G9 set. The activation is followed by an intermittent sound coming from the speaker and alternating red and green flashing diode lights. While active the green light will flash once every second. With every activation the set runs a self-test; if the set has not been connected properly or has a malfunction, the red diode will light up accompanied by a warning tone. When an obstacle is detected your AL G9 will warn you with red diode flashes and audible signals that will become faster as the obstacle gets closer to the outer sensor. You will also be warned with fast red flashes and speaker tones in case of laser interference detection. More on operation modes and audio-visual signals can be found on page 14.

AL G9 has 6 user selectable operating modes which are set to optimal default values but can be modified by using the programming key button at any time during the operation of AL G9. After been modified operating mode will remain permanently written in the memory of the processor. Some additional features will be introduces further on.

4.1 Operating modes

4.1.1 Detection range adjustment (DEFAULT: LEVEL 2)

Before using the parking sensor in driving conditions it should be tested with a piece of paper or another object. A warning tone will be heard, accompanied by the red flashing light as you bring the paper or object closer to the sensor. If needed, the detection range (which can vary from 0 to 3 meters) can be adjusted to four different levels by using the programming key button. Use the following sequence for reprogramming:

Press and hold the key button while counting the flashing green light.
Release the key button after the third (3) flash.

AL G9 will reprogram accompanied by red and green flashing lights and speaker tones. Long tones coming from the speaker during reprogramming symbolize four different detection levels:

1 tone for LEVEL 1 (short mode);
2 tones for LEVEL 2 (medium mode);
3 tones for LEVEL 3 (long mode);
4 tones for LEVEL 4 (extra long mode).

The detection range levels alternate and you will need to reprogram the set several times before reaching the desired setting.

4.1.2 Silent power-up (DEFAULT: OFF)

During activation, only red and green indicator lights will flash without sounds. Use the following sequence to activate/deactivate this feature:

Press and hold the key button while counting the flashing green light.
Release the key button after the fifth (5) flash.

AL G9 will reprogram and this will be signalled by red and green flashing lights and speaker tones.

4.1.3 Laser interference defense (LID) adjustment (DEFAULT: 4 SEC)

AL G9 possesses an advanced program code for detecting and deflecting possible interference signals from other sources of laser emissions on the 905 nm frequency. When a constant interference is detected and recognized as an aggressive disturbance for the parking sensor operation, AL G9 will try to ensure maintaining its reliable performance. During this time the user will be warned by a four second tone from the speaker and a red flashing light that a parking sensor operation has become unreliable. If the parking sensor operation is not recovered within 4 seconds and the interference continues the unit will automatically reset.

You can choose between 4 seconds and 8 seconds duration of eventual interference detection and deflection. This mode can be programmed with the following sequence on the key button:

Press and hold the key button while counting the flashing green light.
Release the key button after the eighth (8) flash.

AL G9 will reprogram accompanied by red and green flashing lights and speaker tones. A short tone coming from the speaker during reprogramming indicates the 4 sec mode being selected while the long tone indicates the 8 sec mode. The limit duration settings alternate so please repeat the sequence to return to the previous state.

4.1.4 LED Dark mode (DEFAULT: OFF)

To prevent the green light from flashing every second during normal operation, you can activate the LED Dark mode. The green light will stop flashing after the warm-up period (60 seconds after the power-up) if this mode is activated.

Use the following sequence to activate/deactivate the LED Dark Mode:

Press and hold the key button while counting the flashing green light.
Release the key button after the tenth (10) flash.

AL G9 will reprogram and this will be signaled by red and green flashing lights and speaker tones.

4.1.5 Laser Power Output (DEFAULT: OPTIMAL)

Choose between the optimal and maximum laser power output modes. Using optimal setting (recommended) will reduce the possibility of error detection while maximum power insures maximum range and energy. To reprogram this mode use the following sequence:

Press and hold the key button while counting the flashing green light.
Release the key button after the thirteenth (13) flash.

Tone with LED flashing red indicates MAXIMUM setting selected while tone with LED flashing green indicates OPTIMAL setting being selected.

4.1.6 Parking sensor mute (DEFAULT: OFF)

With this mode activated the parking sensor will warn you of an obstacle detected only with red flashing lights, while in default setting the light would be accompanied by warning tones from the speaker. To activate/deactivate this mode use the following sequence:

Press and hold the key button while counting the flashing green light.
Release the key button after the eighteenth (18) flash.

AL G9 will reprogram accompanied by three short red flashes.

4.2 Additional features

4.2.1 Speaker mute

The key button is useful in city driving as a single 1 second press will switch the speaker off and further parking sensor warnings will be given just by red flashing lights.
This setting lasts until the set is turned off.

4.2.2 Restore factory default settings

Did you forget which features you programmed into your system? Use this simple programming sequence to restore factory default settings:

Press and hold the key button while counting the flashing green light.
Release the key button after the fifteenth (15) flash.

AL G9 will reprogram accompanied by constant green light and longer speaker tone.

Automatic sensors check

While restoring factory default settings the unit will count and memorize the number of sensors connected to the system. On each subsequent power-up during the self-test process the unit will check if all memorized sensors are present and operational. If one or more of them is disconnected or not operational you will be warned by five 2 seconds long tones and red flashes during first 15 seconds of operation.

NOTE: In order to memorize the new setup initiate this setting after installation of every new sensor.

4.2.3 Manual sensor check

To manually check the number of sensors connected and operating in the system use the following programming sequence:

Press and hold the key button while counting the flashing green light.
Release the key button after the twentieth (20) flash.

The number of long tones coming from the speaker shows how many sensors are found connected.

5. Specifications

Dimensions:

Outer Sensor (LxHxW)
43x20x50 mm (1,7x0.8x2.0 in)
Cable length: 1 m + 4 m (16.4 ft)

Control Box (LxHxW)
85x22x40 mm (3.3x0.8x1.6 in)
Power supply cable: 1 m (3.3 ft)

Control Set (L)
1,5 m (4.9 ft)

Weight:

Outer Sensor
105 g + 160 g (0.26 lb + 0.4 lb)

Control Box
110 g (0.27 lb)

Working temperature:
-20 °C to +60 °C (-4 °F to 140 °F)

Power:

Operational power supply
10 V to 17 V

Current consumption
600 mA max.

Speaker loudness:
90 dB

Laser class:
1M

Laser wavelength:
905 nm

Specifications are subject to change without notice.

6. Operation description

Operation :

Activation mode
1 second following power-up; self-test

Warm-up mode
60 seconds following the Activation mode; during warm-up mode AL G9 functions are limited. The end of a warm-up mode is signaled with a green LED flash and a tone from the speaker.

Search mode
Searching for obstacles; Other functions

LED & sound signals:

LED flashing green
Normal operation, LED flashes green every second

LED flashing red + tone
Obstacle found

LED constant red + tone
Interference detected; LID activated

LED constant red + 1 beep
Faulty operation; low voltage, check vehicle power supply

LED constant red + 2 beeps
Faulty operation, cables unplugged or defective unit, check cables

LED constant red + 3 beeps
Warning sensor unplugged, not properly mounted or a defective sensor, check sensor

LED flashing red + beeps during first 15 seconds of operation
Automatic sensor check failed, check sensor connections. If adding or removing sensors perform code 15 (restore factory defaults).

7. Registration, warranty and service

Registration

To become a Registered owner of the AL G9 please send a registration inquiry no later than 30 days from the date of purchase to **register@ALG9.com**.

Why to register?
If you register, you get once a year free Memocard with the latest firmware sent to your address directly from the factory on your request.
Only registered users will receive newsletters and get special discounts.
To find out if there is a program code upgrade available for your system, send an inquiry to **support@alg9.com** or contact your local dealer.

Warranty

The manufacturer guarantees that the product is fully functional. During production and before delivery it undergoes numerous quality checks. Nevertheless, a limited two years warranty will apply, valid from the date of the first purchase. If you have not registered your product in case of warranty claim you are required to show an original receipt with a visible date of the purchase and a warranty card authorized by the dealer. The warranty terms are defined in the warranty card, here included.

Servicing and Support

If uncertain whether your AL G9 is working correctly please check Operation description, page 14 of this manual. If it does not give you a solution to your problem contact your local dealer or our Service and Support center at **support@ALG9.com**.

Service and support provided by the manufacturer:
A-ELEKTRONIK, Zagreb, Croatia
Phone: +385 1 364 3890
www.a-elektronik.hr

Wholesales:
Radikal d.o.o. (ltd.)
Sesvete - Croatia
info@radikal.hr

www.alg9.com

Warranty card

Name of Customer
Contact information

Product information
Model ID
Serial numbers
Initial firmware version (F/W)

Date of Purchase

Dealer's signature and stamp

15	***Restore factory defaults & memorize sensors setup*** Restore defaults. Initiate restoring each time the number of sensors in the system has been changed so the unit would memorize the new setup. Constant green light and longer speaker tone.
18	***Parking sensor mute (DEFAULT: OFF)*** With this mode activated the parking sensor will warn you of an obstacle being detected only with flashing red lights and with no sounds. 3 short red flashes.
20	***Manual sensors check*** Check how many sensors is connected and operating. The number of tones coming from the speaker indicates the number of sensors connected.

PROGRAMMING CODES REMINDER

Select new settings during normal operation of your unit. Press and hold the programming key button while counting the green flashing lights. The number of flashes required for programming of a certain mode is given in the table below.
For more details see the G9's User Guide.

Nu. of flashes	Mode that will be changed & audio-visual signals
1	***Speaker mute*** This setting lasts until the set is turned off.
3	***Parking detection range (DEFAULT: LEVEL 2)*** Reprogramming tones: 1 tone - LEVEL 1 (short) 2 tones - LEVEL 2 (medium) 3 tones - LEVEL 3 (long) 4 tones - LEVEL 4 (extra long)

5	***Silent power-up (DEFAULT: OFF)*** During activation only red and green indicator lights will flash with no sounds. Red and green flashing lights and 6 short speaker tones.
8	***Laser interference defense (LID) adjustment (DEFAULT: 4 SEC)*** Choose between 4 sec and 8 sec duration of LID. Red and green flashing lights and 4 short speaker tones. If a fifth (5) tone coming from the speaker is short than the 4 sec mode was selected while the long tone indicates that the 8 sec mode was selected.

10	***LED Dark mode (DEFAULT: OFF)*** Prevent the green light from flashing every second. The green light will stop flashing 60 seconds after power-up. Red and green flashing lights and 6 short speaker tones.
13	***Laser Power Output (DEFAULT: OPTIMAL)*** Using «optimal setting» (recommended) will reduce the possibility of error detection while «maximum power» insures maximum range and energy. Tones with LED flashing RED indicate MAXIMUM setting selected while tones with LED flashing GREEN indicate OPTIMAL setting being selected.

Warranty Terms and Conditions

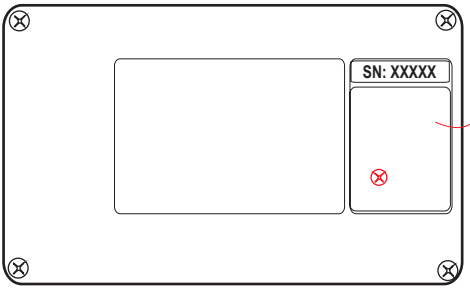
The manufacturer - by means of its sales organization, representative or distributor - guarantees this product against manufacturing defects and guarantees after-sales servicing for two (2) years from the original purchase date.
Should the product fail to work or show a manufacturing defect within the warranty period A-ELEKTRONIK - by means of its sales organization, representative or distributor - will take the necessary actions to restore the perfect functioning of the product. To repair it or to replace is at discretion of A-ELEKTRONIK.
Should the product fail to work or show a manufacturing defect, the consumer shall contact A-ELEKTRONIK Service Center or distributor for further service arrangement. When taken to a service company the product must be accompanied with the warranty card and the official purchase receipt.
It is necessary that the warranty card has been correctly and completely filled out at the time of the original purchase. If not, the warranty may not be in effect.
This warranty shall not apply to the following:
1) Normal wear and tear of the product and/or its parts.
2) Accidents, which occur during shipping and handling, and damage resulting from such accidents.
3) Malfunction or damage due to a product misuse, or negligence by the customer, or any use of the product other than that described in user's guide.
4) Damage caused by incorrect installation.
5) Product is rebuilt, repaired or with adaptation made by non-certified person, as well as by installation, modification or operation with violation of technical specifications and/or safety regulation.
6) Products with serial numbers which have been changed, tampered with or removed.
7) Any damage, failure or loss caused by accident, misuse, and any other failure not directly related to a defect of the product.
The warranty does not cover installation and dismantling fees, nor shipping costs.
Note: This warranty shall not be applicable, if the required information in the warranty card is not completely filled in or if the content is revised or modified in any way.
For further information please visit the website **www.alg9.com**, or write to **support@alg9.com** .

Manufacturer's Service and Support center:

A - ELEKTRONIK
Zagreb, Croatia
Phone: +385 1 364 3890
www.a-elektronik.hr

Upgrade by exchanging the Memocard

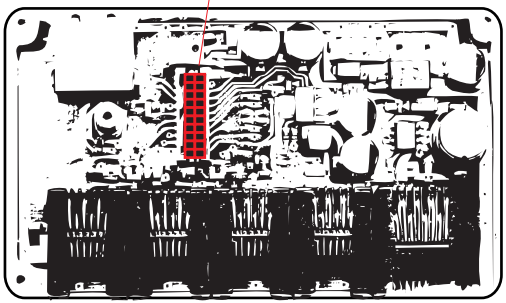
RX Control Box with plug in Memocard



Remove Control Box protective label but do not remove small serial number label

Unscrew 5 screws and open the box

Unplug the old Memocard and plug in the new one



Close the Control box and stick a new label over the 5th screw

IMPORTANT NOTE: 1 protective label is delivered with every Memocard. Do not remove the original label unless you have a spare one. Control boxes without protective labels over the 5th screw will be considered warranty void.